Spruce Aphid in the Southwest

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Southwestern Region

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The spruce aphid, *Elatobium abietinum*, is a small green, soft-bodied insect about 1/32 of an inch in size. Both winged and wingless forms occur. Feeding can cause premature needle drop. During heavy infestations, trees can be completely defoliated. The species was first reported in the Southwest in 1988 when a small area of spruce defoliation was noted in the White Mountains of Arizona. Later that same winter, aphids and defoliation were reported in Santa Fe, New Mexico. It has appeared sporadically since in these same areas. In 1996 and 1997, extensive defoliation was reported in the White Mountains and for the first time, defoliation was observed on the Lincoln National Forest in southern New Mexico. The insect has been previously reported along the Pacific coast, from southeast Alaska to California. Spruce aphid outbreaks are usually preceded by mild winters and are normally short lived. It is unknown if the insect is native or introduced to this region.

Aphid on host foliage.

Biology

In the Southwest, the spruce aphid has been found on both Engelmann and blue spruce. Defoliation appears to be greatest on Engelmann spruce. The insect has also been observed on a variety of ornamental spruce types. Like other aphids, the spruce aphid bears live young with females producing females. Nymphs are reported to mature within 3 weeks. During favorable years, large colonies develop during the winter and feed during mild periods. Populations reach a low point during the summer and may be very difficult to find. In the fall, aphids may reappear and begin feeding on

the current year's foliage. Greatest population increase generally occurs from late winter into early spring. Aphids are often concentrated in the lower, shaded portions of the crown and defoliation is usually heaviest here.

Outbreaks are sporadic, usually short-lived, and associated with mild winter weather. Major factors thought to be involved with outbreak collapse include cold temperatures and overcrowding. The latter can lead to starvation. The occurrence of this insect in the interior west has been a puzzle since the insect is typically considered to be a maritime insect.

Aphids killed by cold temperatures.

Effects on Hosts

Spruce aphids feed by inserting their needle-like mouth parts into host foliage and sucking the sap from the needles. First signs of feeding are yellow patches on the needles. If populations continue to increase, the discoloration intensifies and eventually affected needles turn brown and drop prematurely. Since populations decline prior to needle flush in late spring and early summer, the new foliage is unaffected by the overwintering population of the aphids. Current year's foliage is not affected until aphids begin building up again in the fall. Depending on outbreak size, intensity and timing, defoliation can be partial or complete, but is usually partial.

Management

Many concerns have surfaced since the first report of this insect in 1988. One major concern is the potential for

Defoliated tree

Defoliated branch with new foliage on the end.

spruce mortality and its associated impacts in forest situations. In addition, the defoliation has had a significant visual impact in affected areas. Another concern is whether or not spruce aphid activity may predispose trees to other agents such as spruce beetle. In the meantime, entomologists are trying to learn as much as they can about the insect, its biology, effects, and the factors that favor outbreaks, so that future resource managers can make informed decisions about management of this insect.

Control of this insect is typically considered only when populations are high and only to protect trees in high value settings such as nurseries and ornamental plantings. Several insecticides are registered for control of aphids. In forest settings, effective and economical control is complicated by the insect's habit of feeding in the interior portions of the crown which makes aerial application infeasible.

Defoliated spruce in the White Mountains of Arizona.

Please Read: Caution Pesticides

Pesticides used improperly can be injurious to human beings, animals, and plants. Follow the directions and heed all precautions on labels. Store pesticides in original containers under lock and key—out of reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides where there is danger of drift when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment, if specified on the label.

If you hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

NOTE: Some states have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Environmental Protection Agency, consult your local forest pathologist, county agriculture agent, or State extension specialist to be sure the intended use is still registered.

For more information about spruce aphid, contact:

State and Private Lands

Arizona

Arizona State Land Department
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Federal Lands

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